

Speed Controller Programming Instructions

20A/30A/40A/45A/60A/70A/80A/100A/125A/200A

Phrases 1 Enter programming Mode

1. Connect your motor and receiver to the speed controller, but do not connect the battery yet.
2. Turn on your transmitter and move the throttle stick to the full throttle position (full up). Please Note: Most Futaba transmitters have the throttle channel reversed by default.
3. Connect your battery and the controller will initialize with a musical tone.

Phrases 2 Programming

After 3 seconds, the controller will start beeping a sequence of tones – a musical tone followed by one or more beeps. Each sequence represents a parameter that you can program and is repeated 3 times. The parameters are:

—	Tone + 1 Beep	Cell Type and No. of Cells
— . —	Tone + 2 Beeps	Throttle Setting
— . — . —	Tone + 3 Beeps	Brake Setting /Throttle type (for Heli)
— — — —	Tone + 4 Beeps	Direction and Cutoff Type
— — — — —	Tone + 5 Beeps	Timing Mode
— — — — — —	Tone + 6 Beeps	Pulse Width Modulation (PWM)

Step 1. Starting. When you hear the sequence for the parameter you wish to program, move the throttle stick to the **center position**.

The controller will then **start beeping a Morse code sequence** of short and long beeps representing the possible options you may choose for the selected parameter. See table 2 for a list of all programmable options. Each option sequence is repeated 3 times.

Step 2. Select and save, the select the option, **move the throttle stick back to the full up position.**, When you hear the sequence for the option you wish to select. The controller will then save the selected option, and **sound a long beep as a confirmation**. It then goes back to the beginning of the programming sequence (phrases 2 step 1).

Step 3. Complete programming and save options. Setup all the parameters you need to change.

When complete, move the throttle stick to the lowest (down) position. The controller will save all options and re-initialize in normal running mode so you can start your motor.

The table below summarizes the various programming options for each parameter:

A- Aircraft

B- Helicopter

A: Options for Aircraft

1.1 For (2S-7S)-ESC--Cell Type and Number of Cells	
• — 1 Short + 1 Long	NiMh/NiCD Auto Cell Count - 0.8V/Cell Cutoff Voltage
• — — • 1 Short + 2 Long + 1 Short	7S Li-Po (25.9V) – 21V Cutoff Voltage
• — • — 1 Short + 1 Long + 1 Short + 1 Long	6S Li-Po (22.2V) – 18V Cutoff Voltage
• — • • 1 Short + 1 Long + 2 Short	5S Li-Po (18.5V) – 15V Cutoff Voltage
• • — — 2 Short + 2 Long	4S Li-Po (14.8V) – 12V Cutoff Voltage
• • • • 2 Short + 1 Long + 1 Short	3S Li-Po (11.1V) – 9V Cutoff Voltage
	2S Li-Po (7.4V) – 8V Cutoff Voltage

1.2 For (4S-8S) ESC--Cell Type and Number of Cells	
• — 1 Short + 1 Long	NiMh/NiCD Auto Cell Count - 0.8V/Cell Cutoff Voltage
• — — • 1 Short + 2 Long + 1 Short	8S Li-Po (29.6V) – 24V Cutoff Voltage
• — • — 1 Short + 1 Long + 1 Short + 1 Long	7S Li-Po (25.9V) – 21V Cutoff Voltage
• — • • 1 Short + 1 Long + 2 Short	6S Li-Po (22.2V) – 18V Cutoff Voltage
• • — — 2 Short + 2 Long	5S Li-Po (18.5V) – 15V Cutoff Voltage
• • • • 2 Short + 1 Long + 1 Short	4S Li-Po (14.8V) – 12V Cutoff Voltage

1.3 For (6S-10s) ESC --Cell Type and Number of Cells	
• — 1 Short + 1 Long	NiMh/NiCD Auto Cell Count - 0.8V/Cell Cutoff Voltage
• — — • 1 Short + 2 Long + 1 Short	10S Li-Po (37V) – 30V Cutoff Voltage
• — • — 1 Short + 1 Long + 1 Short + 1 Long	9S Li-Po (33.3V) – 27V Cutoff Voltage
• — • • 1 Short + 1 Long + 2 Short	8S Li-Po (29.6V) – 24V Cutoff Voltage
• • — — 2 Short + 2 Long	7S Li-Po (25.9V) – 21V Cutoff Voltage
• • • • 2 Short + 1 Long + 1 Short	6S Li-Po (22.2V) – 18V Cutoff Voltage

2. Throttle Setting	
• • — 2 Short + 1 Long	Auto Throttle Range *
• • — — 2 Short + 2 Long	1.1ms to 1.8ms
• • — — — 2 Short + 3 Long	Hard start*
• • — — — — 2 Short + 4 Long	Soft start
3. Brake Setting	
• • • — 3 Short + 1 Long	No Brake
• • • — — 3 Short + 2 Long	Soft Brake*
• • • — — — 3 Short + 3 Long	Medium Brake
• • • — — — — 3 Short + 4 Long	Hard Brake

4. Direction and Cutoff Type	
------------------------------	--

.... — 4 Short + 1 Long	Clockwise Rotation *
.... — — 4 Short + 2 Long	Counterclockwise Rotation
.... — — — 4 Short + 3 Long	Soft Cutoff
.... — — — — 4 Short + 4 Long	Hard Cutoff *

5. Timing Mode Setting	
..... — 5 Short + 1 Long	1° - For 2-4 Pole Inrunner Motors *
..... — — 5 Short + 2 Long	7° - For 6-8 Pole Motors
..... — — — 5 Short + 3 Long	15° - For 10-14 Pole Outrunner Motors
..... — — — — 5 Short + 4 Long	30° - For 10-14 Pole High-RPM Outrunner Motors

6. Pulse Width Modulation (PWM) Setting	
..... — 6 Short + 1 Long 8KHz	– For low RPM and low pole count motors *
..... — — 6 Short + 2 Long 16KHz	– For most out runner motors

B: Options for Helicopter

1.1 For (2S-6S)-ESC--Cell Type and Number of Cells	
• — 1 Short + 1 Long	NiMh/NiCD Auto Cell Count - 0.8V/Cell Cutoff Voltage
• — — • 1 Short + 2 Long + 1 Short	6S Li-Po (22.2V) – 18V Cutoff Voltage
• — • — 1 Short + 1 Long + 1 Short + 1 Long	5S Li-Po (18.5V) – 15V Cutoff Voltage
• — • • 1 Short + 1 Long + 2 Short	4S Li-Po (14.8V) – 12V Cutoff Voltage
• • — — 2 Short + 2 Long	3S Li-Po (11.1V) – 9V Cutoff Voltage
• • — • 2 Short + 1 Long + 1 Short	2S Li-Po (7.4V) – 8V Cutoff Voltage

1.2 For (4S-8S) ESC--Cell Type and Number of Cells	
• — 1 Short + 1 Long	NiMh/NiCD Auto Cell Count - 0.8V/Cell Cutoff Voltage
• — — • 1 Short + 2 Long + 1 Short	8S Li-Po (29.6V) – 24V Cutoff Voltage
• — • — 1 Short + 1 Long + 1 Short + 1 Long	7S Li-Po (25.9V) – 21V Cutoff Voltage
• — • • 1 Short + 1 Long + 2 Short	6S Li-Po (22.2V) – 18V Cutoff Voltage
• • — — 2 Short + 2 Long	5S Li-Po (18.5V) – 15V Cutoff Voltage
• • — • 2 Short + 1 Long + 1 Short	4S Li-Po (14.8V) – 12V Cutoff Voltage

1.3 For (6S-10s) ESC --Cell Type and Number of Cells	
• — 1 Short + 1 Long	NiMh/NiCD Auto Cell Count - 0.8V/Cell Cutoff Voltage
• — — • 1 Short + 2 Long + 1 Short	10S Li-Po (37V) – 30V Cutoff Voltage
• — • — 1 Short + 1 Long + 1 Short + 1 Long	9S Li-Po (33.3V) – 27V Cutoff Voltage
• — • • 1 Short + 1 Long + 2 Short	8S Li-Po (29.6V) – 24V Cutoff Voltage
• • — — 2 Short + 2 Long	7S Li-Po (25.9V) – 21V Cutoff Voltage
• • — • 2 Short + 1 Long + 1 Short	6S Li-Po (22.2V) – 18V Cutoff Voltage

2. Throttle Setting	
• • — 2 Short + 1 Long	Auto Throttle Range
• • — — 2 Short + 2 Long	1.1ms to 1.8ms
• • — — — 2 Short + 3 Long	Hard start
• • — — — — 2 Short + 4 Long	Soft start

3. Throttle Type	
• • • — 3 Short + 1 Long	Normal *
• • • — — 3 Short + 2 Long	Governor Mode with 2-4 poles motors
• • • — — — 3 Short + 3 Long	Governor Mode with 6-10 poles motors
• • • — — — — 3 Short + 4 Long	Governor Mode with 12-14 poles motors

4. Direction and Cutoff Type	
• • • — 4 Short + 1 Long	Clockwise Rotation
• • • — — 4 Short + 2 Long	Counterclockwise Rotation
• • • — — — 4 Short + 3 Long	Soft Cutoff
• • • — — — — 4 Short + 4 Long	Hard Cutoff

5. Timing Mode Setting	
------------------------	--

•••• — 5 Short + 1 Long	1° - For 2-4 Pole Inrunner Motors
•••• — — 5 Short + 2 Long	7° - For 6-8 Pole Motors
•••• — — — 5 Short + 3 Long	15° - For 10-14 Pole Outrunner Motors
•••• — — — — 5 Short + 4 Long	30° - For 10-14 Pole High-RPM Outrunner Motors

6. Pulse Width Modulation (PWM) Setting	
••••• — 6 Short + 1 Long 8KHz	– For low RPM and low pole count motors
••••• — — 6 Short + 2 Long 16KHz	– For most outrunner motors

Electronics Speed Controllers Specification

	Cons- t	Max Current	BEC	Input	TIMING	PWM	Weight (G)	Size
10A	10A	15A	1A	4-10NIMH 2-3LIPO			11//6	24x17x5
20A	20A	25A	2A	4-10NIMH 2-3LIPO			18//11	32x24x7
30A	30A	40A	2A	4-10NIMH ~2-3LIPO			23//14	45X24X9
45A	45A	60A	NO	6-18NIMH ~2-7LIPO	Programmable - 1/7/15/30	programmable - 8/16K	43//34	46X35X8
65A	65A	80A	NO	6-18NIMH ~2-7LIPO	Programmable - 1/7/15/30	programmable - 8/16K	55//45	55x35X8
100A LV	100A	150A	NO	12-18NIMH ~4-7LIPO	programmable - 1/7/15/30	programmable - 8/16K	67//56	55X35X15
80A HV	80A	100A	NO	16-32NIMH ~6-10LIPO	programmable - 1/7/15/30	programmable - 8/16K	63//54	77X53X8
100A -HV	100A	125A	NO	12-32NIMH ~6-10LIPO	programmable - 1/7/15/30	programmable - 8/16K	78//62	77X53X13